Model AD-29 w/Flo Valve

Part 104 453A

NORDSON CORPORATION • AMHERST, OHIO • USA

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ISSUED 6/20/75 SUPERSEDES

LITHO U.S.A.

REPLACEMENT FOR AD-29
FIRST GENERATION SEAL (PACKING) KIT

The first generation AD-29 packing kit (with leather washers) is now obsolete. It is no longer available.

If P/N 270 160 is ordered, the customer will receive the new version packing (seal) kit. The two packing kits are interchangeable.

Follow these directions to replace the leather washer version packing kit with the new version:

To reassemble the AD-29 gun using the nylon washer and O-ring packing kit, insert the nylon seal washer (23) in the gun body. Place the O-ring (22) in the recess located at the lower end of the needle packing (21).

Insert the needle packing (21) in the gun body. Thread the packing securely in the body. Use a small amount of grease to lubricate the packing and needle before installing these components in the gun body.

Place the threaded clamp (19) over the upper end of the shut-off needle (20) about 1/16 inch (.040 to .070 inch) and thread the piston (18) on the clamp. Place the piston seal (17) and the piston washer (16) over the piston and secure this assembly with the locking nut (15).

Insert the needle assembly through the needle packing until the tip of the shut-off needle (20) appears at the extrusion end of the gun.

Place the piston back-up spring (14) on top of the air piston and thread the air cylinder cover (11) on the gun body. Complete reassembly by threading the nozzle seat (10) into the gun body, place the air cap (9) in the retaining nut (8) and secure the retaining nut to the extrusion end of the gun.

SEAL KIT PARTS LIST

Fig. 1 Key	Part No.	Description	Qty.
-	270 696	Seal Kit, AD-29	Ref.
15	984 133	. Nut, Lock, Hex	1
16	270 145	. Washer, Piston Seal	1
17	270 138	. Seal, Piston	1
18	270 144	. Piston	1
19	270 143	. Clamp, Threaded	1
20	270 142	. Needle, Shut-Off	1
21	270 598	. Packing, Needle	1
22	940 060	. O-ring, Viton, 1/8 x 1/4	1
23	270 635	. Washer, Seal, Nylon	1

8/78 - Revised P/N.

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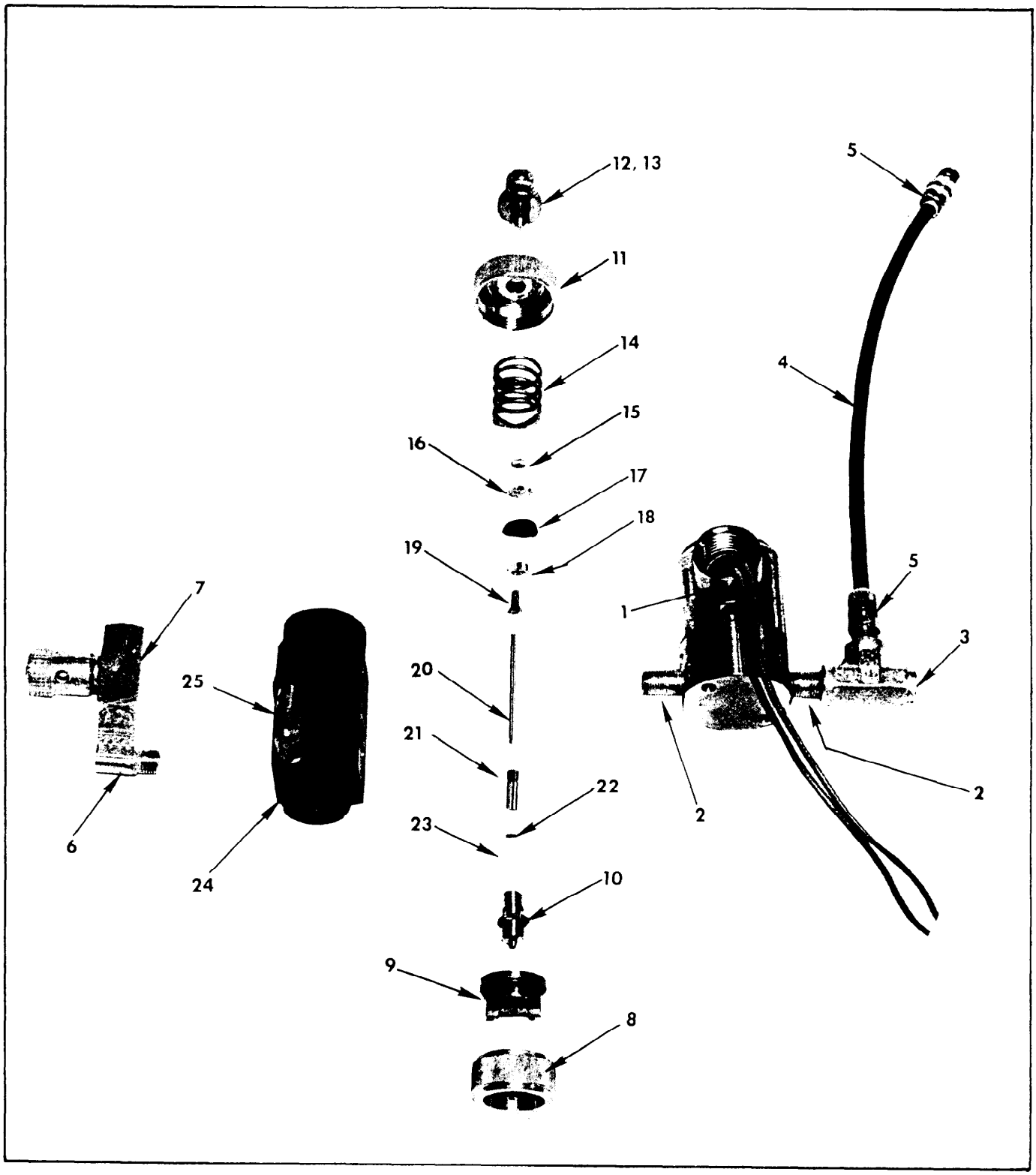

Figure 1 - AD-29 Exploded View

AD-29 GUN

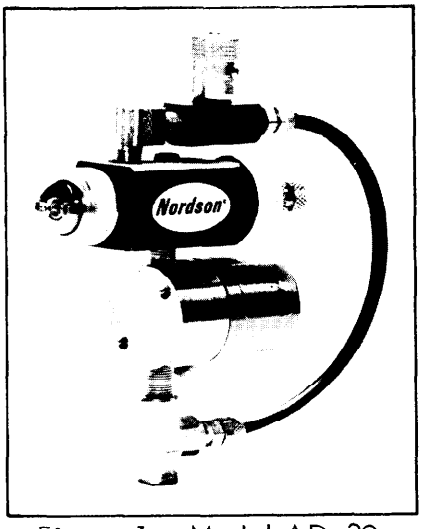

Figure 1 - Model AD-29

DESCRIPTION

The Nordson AD-29 Gun is designed to apply liquid resins (cold glues) in a fine spray that will penetrate and harden on corrugated substrates much more rapidly than the extrusion or wheel type cold adhesive systems. By atomizing the cold liquid adhesive into a spray the set time is reduced to a four (4) to six (6) second range. This short set time eliminates the need for long compression sections commonly required in cold glue applications

Installation of the AD-29 Gun is simple, clean-up time is minimal, and adhesive waste is slight.

SPECIFICATIONS

	U.S.A.	METRIC
Pressure Pot Capacity	2 Gallons	7.56 Liters
Operating Temperature	Ambient	-
Operating Air Pressure - Gun	40-60 PSIG	2.8-4.2 kg/cm^2
Air Consumption - Gun	2 SCFM/Gun Minimum	.944 Liters/Sec.
Operating Air Pressure - Pressure Pot	10-40 PSIG	.7-2.8 kg/cm^2
Electrical Requirements (Control)	115 VAC, 50/60 Hz, 50 Watts	

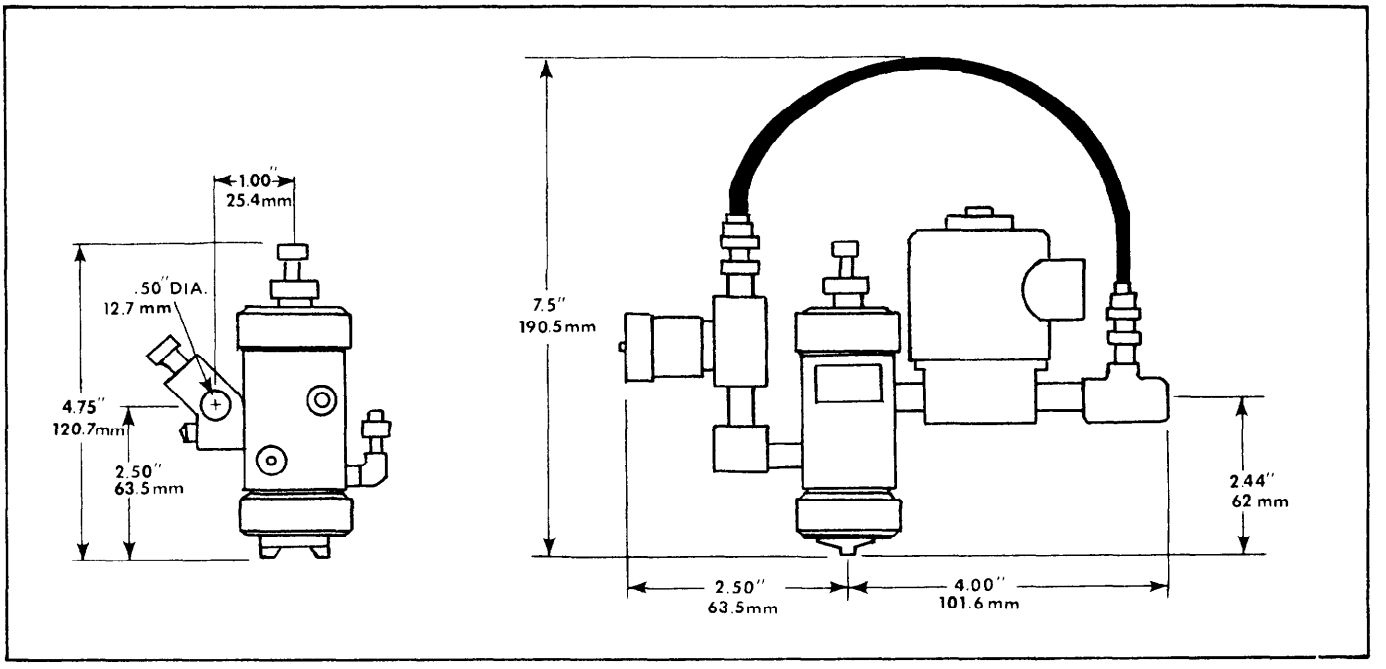

Figure 1A - Mounting Dimensions

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THEORY OF OPERATION

The Nordson Pnu-Bond System is comprised of one or more AD-29 Guns (A), a Hot Stitch Control (B), a Pressure Pot (C) (or a Special Model 25 Pump), and the necessary hoses to connect the guns to the pot (or pump).

In an installation having a pressure pot, air is supplied to the pressure pot through a dual regulator. Atomozing air is supplied to each gun by a 3/8" O.D. polyethylene hose (D), while the adhesive is delivered to the gun by a 1/4" O.D. polyethylene hose (E). The AD-29 gun has a single high pressure orifice to deliver the adhesive to the substrate. Atomizing air is directed to the adhesive through five air ports located in the air cap.

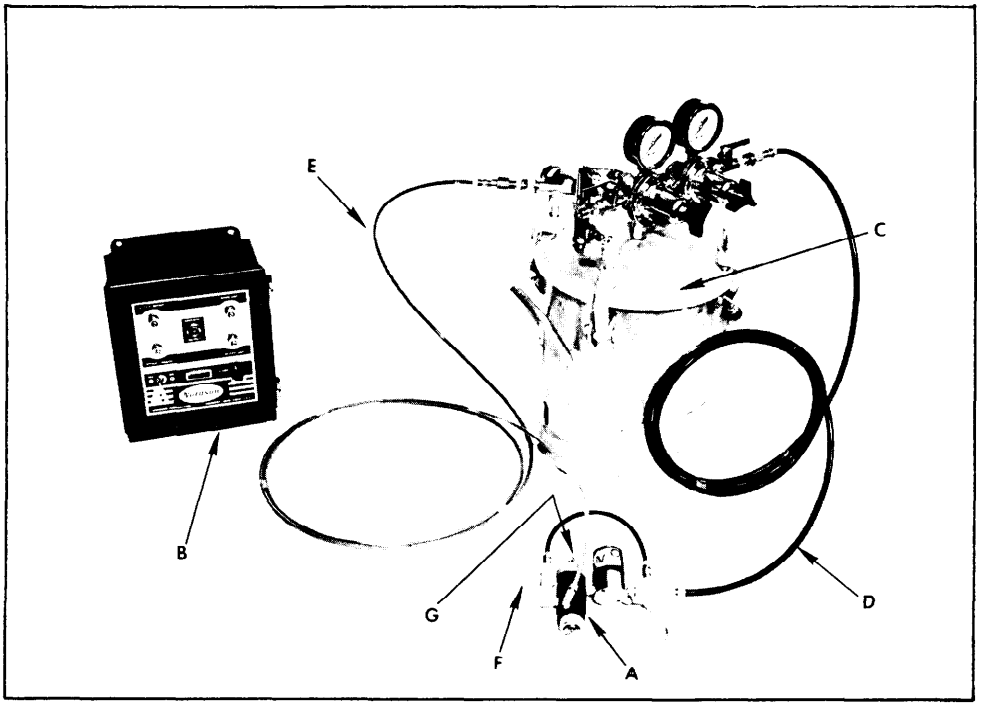

Figure 2 - Nordson Pnu-Bond System (1 Gun)

A multi-gun installation uses two manifolds (one on the air line and one on the fluid line) to supply air and adhesive to each gun from a single supply source.

A solid-state Stitch Control will permit the spray pattern to be interrupted into a spray-gap-spray pattern to keep glue consumption at a minimum. The solid-state timer is signalled by a customer-supplied triggering device (limit switch, photocell).

An air control valve (F) permits adjustment of the atomization from coarse to fine. The valve's adjusting knob is color coded to aid specific adjustment.

Adhesive flow rate is directly related to the air pressure applied to the pressure pot. The flow rate can be further refined by adjusting the needle lift. This adjustment can be made using the screw (G) at the top of the gun.

11/21/75 - Corrected copy

INSTALLATION

The Nordson Pnu-Bond System has several components that require installation before the system can be used. Installation time will depend on the size of the system (how many guns are to be used).

To install the Pnu-Bond System, use the following procedure:

1. Position each gun to be used on a 1/2" diameter mounting bar and secure it by tightening the square head screw.

   NOTE: The spray pattern width is directly proportional to the distance from the nozzle to the substrate. The viscosity of the adhesive will determine the ratio of gun height to spray pattern width. Generally, the ratio is somewhere between 1:1 and 1:1.5.

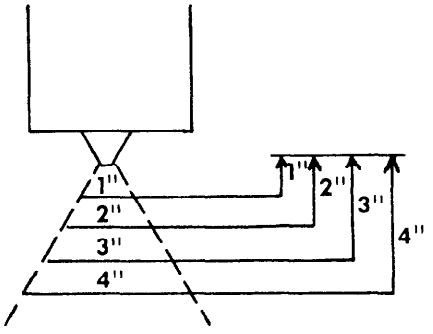

Figure 3 - Spray Pattern Dimensions

Example: An adhesive with a viscosity of 1600 CPS will provide a spray pattern at a 1:1 ratio. An adhesive with a viscosity of 500 CPS may provide a spray pattern closer to a 1:1.5 ratio.

U.S.A.	METRIC
1"	25.4 MM
2"	50.8 MM
3"	76.2 MM
4"	101.6 MM

2. Mount the Stitch Control on the parent machine or separate stand.

   ⊘ Do not subject the stitcher to excessive vibration or extreme ambient temperatures.

3. Connect the stitcher to a 115 VAC input power supply. Refer to the appropriate service manual (57-4 or 57-12) for complete installation instructions.

4. Connect each gun solenoid to the stitcher. Refer to the appropriate service manual (57-4 or 57-12) for correct wiring information.

5. Connect triggering device (limit switch, photocell) to stitcher. (See appropriate service manual for instructions). Make certain the gun is grounded and wiring meets all applicable code requirements.

6. Connect the fluid filter assembly to the pressure pot.

7. Attach an air supply line to the inlet side of the 3/8 NPS dual regulator assembly.

Single Gun Installation (See Figure 4)

The AD-29 must be connected to the pressure pot pneumatically and hydraulically.

1. Attach a 1/4 NPS x 1/4 NPT connector (1) to the dual regulator assembly's output side.

2. Secure a 1/4 NPT x 1/8 NPT reducer (2) to the connector.

11/21/75 - Corrected metric notation.

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INSTALLATION, (Continued)

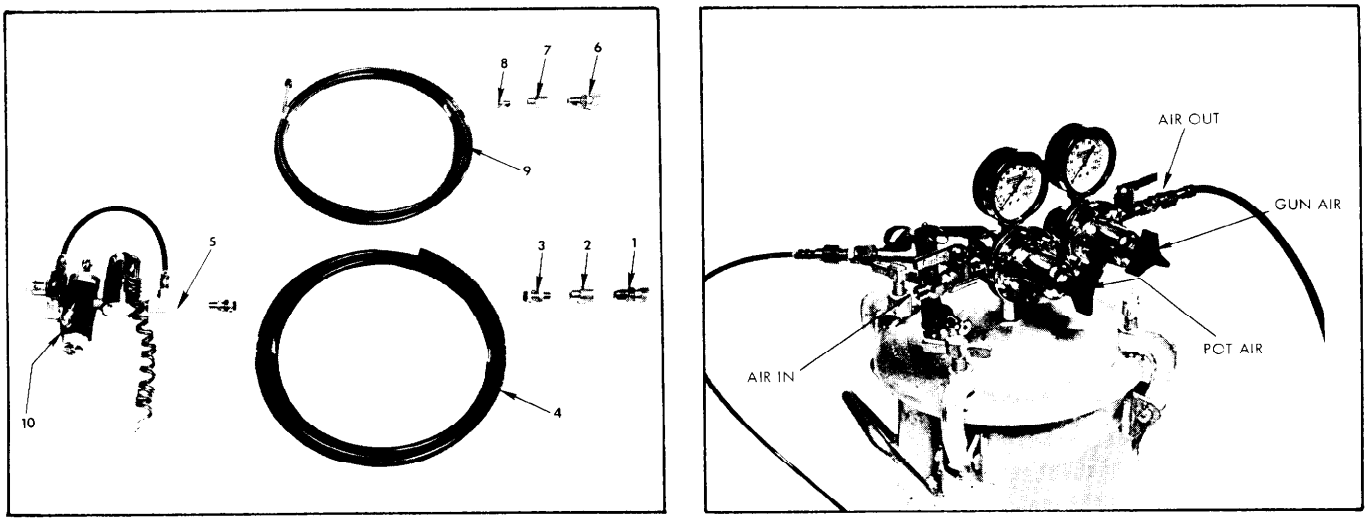

Figure 4 - Typical Single Gun Installation

3. Attach a 1/8 NPT x 3/8 Tube compression fitting (3) to the reducer.

4. Secure the 3/8" black polyethylene tube (4) to the compression fitting.

5. Connect the black polyethylene tube to the tee fitting (5) on the gun with another 1/8 NPT x 3/8 Tube compression fitting. (Both straight and elbow fittings are supplied. Use either one.)

6. Attach 3/8 NPS x 1/4 NPT connector (6) to filter assembly on pressure pot.

7. Secure 1/4 NPT x 1/8 NPT reducer (7) to the previously installed connector.

8. Install the 1/8 NPT x 1/4 Tube compression fitting (8) on the connector.

9. Secure the 1/4" natural polyethylene tubing (9) to the compression fitting.

10. Attach the open end of the natural polyethylene tubing to the fluid inlet (10) on the gun.

Multi-Gun Installation

Each gun must be connected pneumatically and hydraulically to the pressure pot. A manifold installed on the air and fluid lines permits this to be done.

1. Attach 1/4 NPS x 1/4 NPT connector to the output side of the dual regulator assembly.

2. Install one of the two manifolds supplied on the connector.

3. Install a 1/8 NPT x 3/8 Tube compression in the manifold for each gun to be used.

4. Plug any unused manifold ports with a 1/8 NPT pipe plug.

5. Plug the open port at the end of the manifold with a 1/4 NPT pipe plug.

11/21/75 - Corrected dimension

INSTALLATION, (Continued)

6. Cut the black polyethylene tubing to the correct length. (We have supplied enough tubing to allow 10 feet or 3.04 meters of tubing for each gun.)

7. Connect a length of tubing to each compression fitting in the air line manifold.

8. Install a 1/8 NPT x 3/8 Tube compression fitting (straight or elbow) in the tee fitting on each gun.

9. Connect a length of black tubing to each gun at the tee fitting.

10. Secure a 3/8 NPS x 1/4 NPT connector to output side of fluid filter assembly.

11. Attach the remaining manifold to the connector on the filter.

12. Starting at the port the furthest from the manifold fluid inlet, install a 1/8 NPT x 1/4 Tube compression fitting for each gun to be used.

13. Plug any remaining ports with a 1/8 NPT pipe plug.

14. Plug the open port at the end of the manifold with a 1/4 NPT pipe plug.

15. Cut the 1/4" natural polyethylene tubing to the correct length. (Enough bulk tubing is supplied to allow a maximum of 10 feet or 3.04 meters of tubing to each gun in the system.)

16. Secure a length of tubing to each compression fitting in the fluid line manifold.

17. Attach the open end of each 1/4" tubing length to the fluid inlet on each gun.

OPERATION

Initial Start-Up

Do not use flammable adhesives. Provide adequate ventilation to safely remove any harmful adhesive solvent vapors.

1. Agitate adhesive before pouring into pressure pot.

   NOTE: For best results always protect the adhesive from freezing.

   Cold adhesives generally have a short shelf life (about 90 days). Always rotate your adhesive stock. Refer to adhesive specification sheet for statement of shelf life.

2. Pour adhesive into pressure pot after loosening four (4) clamps and removing cover.

   NOTE: The pressure pot should have a stainless steel or plastic liner or be coated so that the water-based adhesive will not react with the galvanized pot.

3. Close the pot and secure all four (4) clamps.

4. Apply air pressure to the pot. The system works well at pressures between 10 and 40 PSIG (.7 and 2.8 kg/cm^2)

   NOTE: The air pressure to the pot directly affects the flow rate of the adhesive.

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OPERATION, (Continued)

5. Adjust air pressure to the gun solenoid.

NOTE: The gun works best at a air pressure setting of 55 PSIG (3.87 kg/cm2).

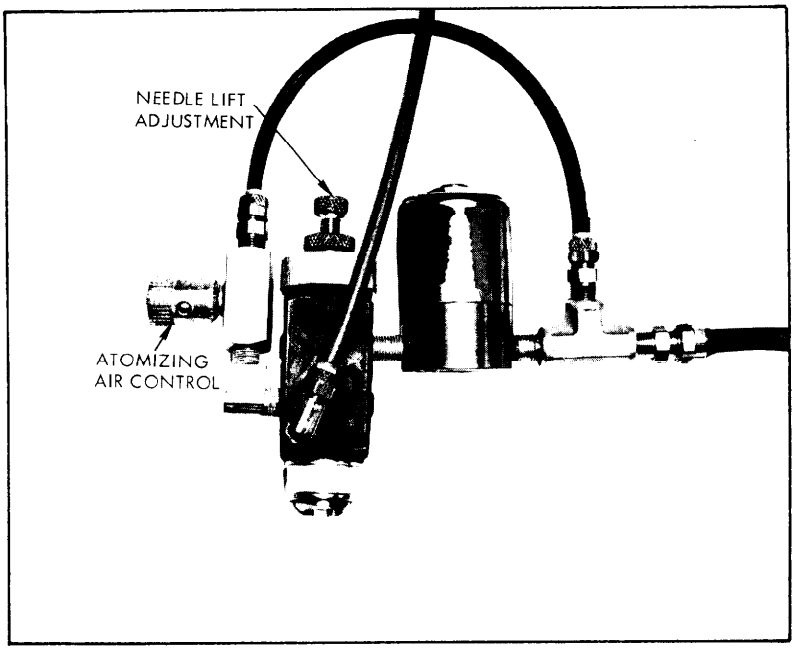

Figure 5 - Gun Adjustments

11/21/75 - Needle adjustment information changed

6. Adjust atomizing air. Close the air control valve (needle valve) by rotating the knob clockwise. Then open the valve two (2) full turns counter-clockwise. For finer atomization turn the knob counter-clockwise; for coarser atomization turn the knob clockwise.

NOTE: Each full turn of the needle valve knob provides about one (1) SCFM of air at 55 PSIG (.125 Liters/Sec at 3.87 kg/cm2).

The air flow valve is color coded.

	U.S.A.	METRIC
Green	.8 SCFM @ 55 PSIG	.377 Liters/Sec @ 3.87 kg/cm2
Gold	1.8	.85
Blue	2.8	1.32
Silver	4.6	2.17

7. Adjust the needle lift. Close the needle adjustment screw by turning it clockwise until it stops. Always loosen the locknut before turning the screw. Now open the needle lift adjustment by turning the screw two (2) full turns counterclockwise. If the flow rate needs adjustment, increase or decrease the pot (pump) pressure.

8. Tighten the needle lift locking nut.

9. Adjust the Stitch Control (see the appropriate Stitcher Service Manual).

10. The system is ready for use.

NOTE: Keep the system pressurized unless opening and refilling the pressure pot or removing pressure lines.

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OPERATION, (Continued)

NOTE: By keeping the system pressurized, the adhesive will not drain out of the fluid lines. Keeping the fluid lines full will prevent adhesive residue from plugging the hoses and guns.

1. Shut off Stitcher.

Start-Up

1. Turn on Stitcher.
2. If possible, position substrate under (over) guns and fire them a few times.

Refilling the Pressure Pot

1. Shut off air pressure to pot.
2. Open pot relief valve.

Do not loosen clamps until all pressure has been relieved.

3. Loosen four (4) clamps and remove pot cover.
4. Agitate fresh adhesive supply briefly.
5. Pour fresh adhesive into pot.

   NOTE: To keep the pot, fluid lines and guns clean it is a good idea to use a liner in the pot. This liner can be alternated as the pot is refilled keeping skimming of the pot at a minimum.

6. Close the pot and secure the four (4) clamps.
7. Turn on air pressure to the pot.

MAINTENANCE

A cold adhesive system requires some daily maintenance to keep the system working at optimum levels.

1. Clean the air ports (4) in the air cap daily. Use a soft wire probe (about .025" diameter).
2. Remove the air cap and clean the area around the nozzle seat of all residual adhesive.
3. Check the inline adhesive filter on a regular basis.
4. Do not allow the inside walls of the pressure pot to skim over.
5. Flush the hydraulic part of the system regularly with warm water.

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TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE
Adhesive flowing, no atomization	Flo valve closed. Air cap ports blocked. Air hose kinked. Air hose fittings blocked.
Adhesive flowing, atomization too coarse	Flo valve closed too far. Air cap ports blocked. Air hose partially blocked. Air hose fittings partially blocked.
Adhesive flowing, atomization too fine	Flo valve opened too far. Gun air pressure too high (over 65 PSIG/4.57 kg/cm^2)
No adhesive flow	Pressure pot not sufficiently pressurized. No air pressure to gun. Stitch Control not "On". Stitch Control not functioning. Gun solenoid failed. Needle lift improperly adjusted. Fluid line blocked. Air line blocked. Pressure pot empty.
Too little adhesive flow	Pressure pot not sufficiently pressurized (25 PSIG/1.76 kg/cm^2 optimum). Needle lift adjusted too low. Fluid line blocked. Fluid filter plugged.
Too much adhesive flow	Pressure pot (over 45 PSIG/3.16 kg/cm^2) Needle lift adjusted too high.
Improper adhesive pattern (width)	Air cap port(s) plugged. Fluid seat blocked. Glue dried on needle face. Air cap orifice blocked.
Improper adhesive pattern (length)	Triggering device malfunction. Stitcher set incorrectly. Stitcher malfunctioning (see appropriate manual).
Air escaping from ports in AD-29 air cylinder cover	Piston seals need lubrication or replacement.
Adhesive leaking from ports in AD-29 cylinder cover or solenoid	Needle seal washers need replacement.

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DISASSEMBLY

The AD-29 gun is disassembled by removing the retaining nut (8), air cap (9), and nozzle/seat (10) from the extrusion end of the gun. (Refer to Figure 6 for key numbers and exploded view.) Loosen the air cylinder cover (11) and remove the piston back-up spring (14). Pull the air piston and needle from the gun body. Now the needle packing (21), the O-ring (22) and seal washer (23) can be removed from the gun body. Loosen the locking nut (15) and lift the piston washer (16) and piston seal (17) off the piston. Thread the piston (18) off the threaded clamp (19). Disassembly is complete.

The needle packing (21), O-ring (22), and seal washer (23) are available in the AD-29 seal kit.

REASSEMBLY

To reassemble the AD-29 gun, insert the nylon seal washer (23) in the gun body. Place the O-ring (22) in the recess located at the lower end of the needle packing (21). Insert the needle packing in the gun body. Thread the needle packing securely in the gun body. Use a small amount of grease to lubricate the packing and needle as these parts are installed in the gun body.

NOTE: Be certain the needle packing is tightened securely in the gun body.

Place the threaded clamp (19) over the upper end of the shut off needle (20) about 1/16" (.040"-.070") and thread the piston (18) on the clamp. Place the piston seal (17) and the piston washer (16) over the piston and secure this assembly with the locking nut (15). Insert the needle assembly through the packing until the shut off needle tip appears at the extrusion end of the gun.

Place the piston back-up spring (14) on top of the air piston and thread the air cylinder cover (11) on the gun body. Complete reassembly by threading the nozzle/seat (10) into the gun body, place the air cap (9) in the retaining nut (8) and securing the retaining nut to the extrusion end of the gun.

8/78 - Revised P/N.

RECOMMENDED SPARE PARTS LIST

Fig. 6 Key	Part No.	Description	Req'd.
-	270 696	Seal Kit, AD-29	Ref.
15	984 133	. Nut, Lock, Hex, 1/4-28	1
16	270 145	. Washer, Piston Seal	1
17	270 138	. Seal, Piston	1
18	270 144	. Piston	1
19	270 143	. Clamp, Threaded	1
20	270 142	. Needle, Shut Off	1
21	270 598	. Packing, Needle	1
22	940 060	. O-Ring, Viton, 1/8 x 1/4	1
23	270 635	. Washer, Seal, Nylon	1
9	270 152	Air Cap, AD-29	1
10	270 151	Nozzle/Seat, AD-29	1

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ISSUED 8/78 SUPERSEDES 4/77
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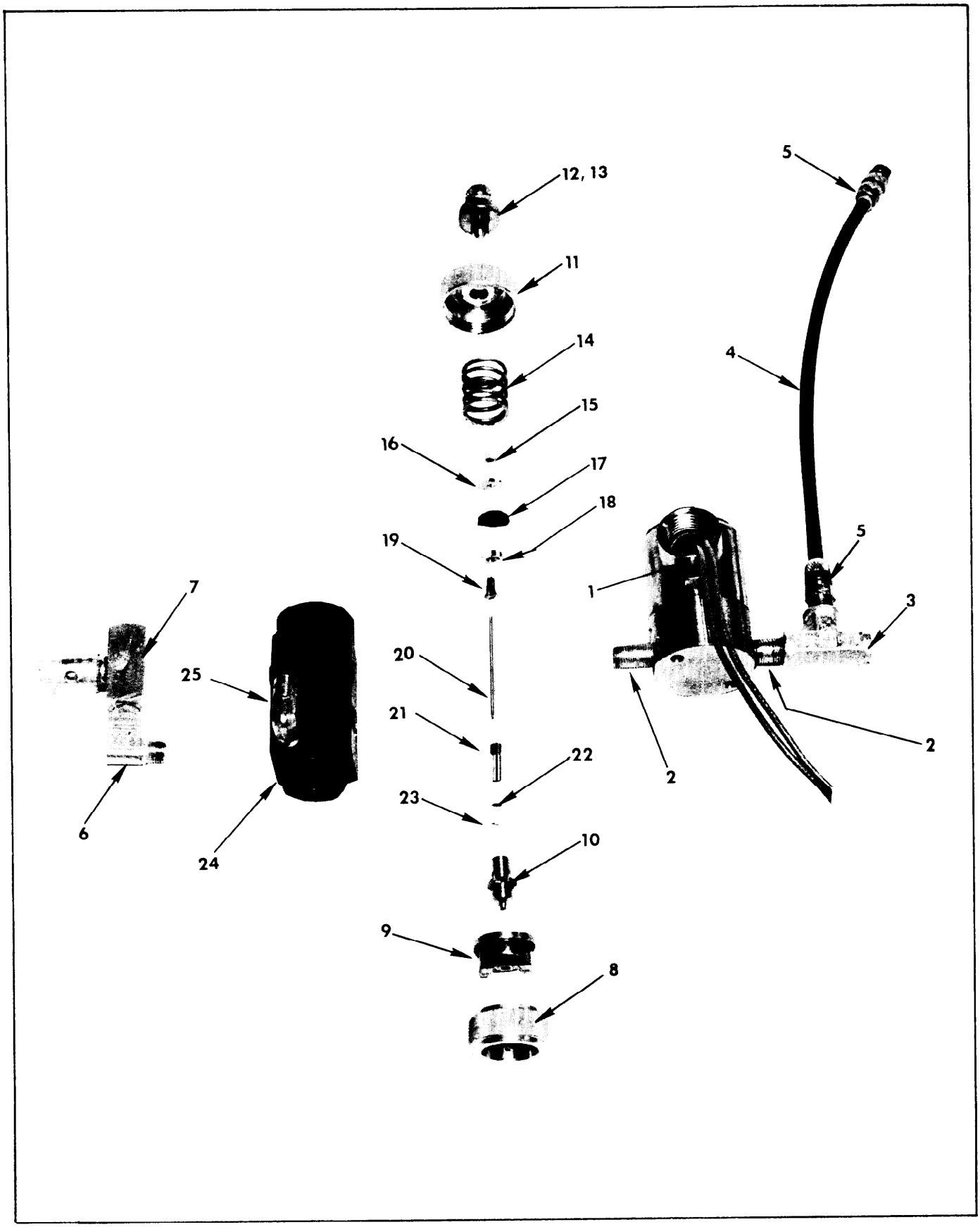

Figure 6 - AD-29 Exploded View

4/77 - Photo updated.

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PARTS LIST

Fig. 6 Key	Part No.	Description	Req'd.
-	270 136*	Gun, AD-29 w/Solenoid, Flo Valve	-
1	901 015	. Solenoid, 120 VAC	1
2	973 000	. Nipple, 1/8 NPT, Close	3
3	973 250	. Tee, 1/8 NPT	1
4	900 509	. Tubing, 1/4 O.D.	.75 Ft.
5	971 154	. Connector, 1/8 NPT x 1/4 O.D. Tube	2
6	973 125	. Elbow, Street, 1/8 NPT	1
7	901 091	. Valve, Needle, Flo Control	1
-	270 137	. Gun, AD-29	1
8	270 153	. . Nut, Retaining	1
9	270 152	. . Air Cap, AD-29	1
10	270 151	. . Nozzle/Seat, AD-29	1
11	270 141	. . Cover, Air Cylinder	1
12	270 139	. . Screw, Needle Stop	1
13	270 140	. . Nut, Locking	1
14	270 156	. . Spring, Piston Back-Up	1
15	984 133	. . Nut, Lock, Hex, 1/4-28	1
16	270 145	. . Washer, Piston Seal	1
17	270 138	. . Seal, Piston	1
18	270 144	. . Piston	1
19	270 143	. . Clamp, Threaded	1
20	270 142	. . Needle, Shut Off	1
21	270 598	. . Packing, Needle	1
22	940 060	. . O-Ring, Viton, 1/8 x 1/4	1
23	270 635	. . Washer, Seal	1
24	270 150	. . Body, Gun w/Nameplate, AD-29	1
-	-	. . . Body, Gun, AD-29	
-	-	. . . Nameplate, AD-29	1
25	971 403	. . Connector, 1/8 NPT x 1/4 Tube	1
-	973 402	. . Plug, Pipe, 1/8 NPTF	1
-	270 157	. . Mounting, Retainer	1
28	981 148	. . Screw, Fil. Hd., 10-32 x 1-1/4	2
-	981 405	. . Screw, Sq. Hd., 3/8-16	1
-	900 534	Tubing, 1/4 O.D., Polyethylene, .040" Wall	-
-	900 511	Tubing, 3/8 O.D., Polyethylene, .062" Wall	-

4/77 - Updated Gun Part Numbers

* See page 42-15-01 for INTERNATIONAL MARKET part number.

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PNU-BOND SYSTEM PARTS LIST

Fig./ Key	Part No.	Description	F1-01	F1-02	F1-05	F1-03	F1-06
-	F1-01	Model AD-29, One Gun Cold Adhesive System, w/2 Gallon Pressure Pot	1				
-	F1-02	Model AD-29, Two Gun Cold Adhesive System, w/2 Gallon Pressure Pot		1			
-	F1-05	Model AD-29, Three Gun Cold Adhesive System w/2 Gallon Pressure Pot			1		
-	F1-03	Model AD-29, Four Gun Cold Adhesive System w/2 Gallon Pressure Pot				1	
-	F1-06	Model AD-29, Five Gun Cold Adhesive System w/2 Gallon Pressure Pot					1
2/A	270 136	. Gun, AD-29 w/Solenoid, Flo Valve	1	2	3	4	5
2/C	244 528	. Pressure Pot w/Dual Regulators, 2 Gal.	1	1	1	1	1
-	240 446	. Filter Assembly	1	1	1	1	1
2/D	900 511	. Tubing, 3/8 O.D., Polyethylene, Black, .062"	10 Ft.	20 Ft.	30 Ft.	40 Ft.	50 Ft.
2/E	900 534	. Tubing, 1/4 O.D., Polyethylene, Natural, .040"	10 Ft.	20 Ft.	30 Ft.	40 Ft.	50 Ft.
2/B	244 507	. Hot Stitch Control, CST-1, 115 VAC	1	1	1	1	1
-	270 161	. Kit, Installation, One Gun	1				
-	270 162	. Kit, Installation, Two Gun		1			
-	270 163	. Kit, Installation, Three Gun			1		
-	270 164	. Kit, Installation, Four Gun				1	
-	270 165	. Kit, Installation, Five Gun					1
4/1	972 597	. . Connector, Swivel, 3/8 NPS x 1/4 NPT	1	1	1	1	1
4/6	972 596	. . Connector, Swivel, 1/4 NPT x 1/4 NPS	1	1	1	1	1
-	971 508	. . Connector, Elbow, 1/8 NPT x 3/8 Tube	1	2	3	4	5
4/3	971 260	. . Connector, Tube, 3/8 O.D. x 1/8 NPT	2	4	6	8	8
4/8	971 154	. . Connector, Male, 1/4 O.D. x 1/8 NPT	1	2	3	4	4
4/2 and 7	973 313	. . Reducer, 1/4 NPT x 1/8 NPT	2				
-	270 159	. . Manifold (Not shown)		2	2	2	2
-	973 402	. . Plug, Pipe, 1/8 NPT		4	2		
-	973 410	. . Plug, Pipe, 1/4 NPTF		2	2	2	
-	971 155	. . Connector, Male, 1/4 O.D. x 1/4 NPT					1
-	971 258	. . Connector, Male, 3/8 O.D. x 1/8 NPT					1
-	901 911	. . Wrench, Adjusting, Module	2	2	2	2	2

11/21/75 - Corrected error